ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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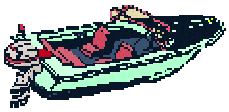
Outboard Marine Engines and the Environment

New Technology Engines Reduce Air and Water Pollution

The Problem with Outboard Marine Engines

New Hampshire has hundreds of lakes and ponds and thousands of miles of rivers which provide outdoor enthusiasts with many opportunities to enjoy time on the water. Until recently, most outboard boat engines and personal watercraft (PWCs) were powered by conventional carbureted two-stroke marine engines. The problem with these engines is that they are very inefficient in their use of gasoline and oil. Pollution caused by two-stroke technology occurs because fuel is entering the combustion chamber from the carburetor while the exhaust is leaving the chamber. Mixing between the intake and exhaust gasses causes raw fuel to be passed directly out of the engine along with the cooling water. According to some studies, in older carbureted two-stroke engines as much as 30 percent of the fuel passes through the combustion chamber unburned, releasing hydrocarbons, nitrogen oxides, and toxic constituents of gasoline directly into the environment.



Hydrocarbons and nitrogen oxides released into the air contribute to the formation of ground-level ozone, which can irritate the respiratory system and aggravate existing respiratory conditions such as asthma. Gasoline released unburned into lakes and rivers contributes to elevated levels of benzene, methyl tertiary-butyl ether (MtBE), and other toxic gasoline components in water bodies where boating and PWCs are allowed.

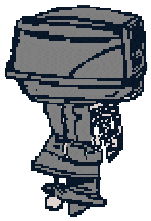
Low-Pollution Marine Engines Now Available

Low-pollution marine engines are now available that greatly reduce hydrocarbon and toxic air emissions, and reduce the release of gasoline constituents into waterways. The low-pollution engines have been developed by marine engine manufacturers in response to the U.S. Environmental Protection Agency (EPA) regulations to control emissions from marine engines to help reduce air and water pollution. These engines are being phased into the marketplace by the engine manufacturers between model years 1998 and 2006. As of 2006, all new outboard engines and PWCs sold in the U.S. will be low-pollution technology.

The low-pollution outboards come as four-stroke or direct fuel injection two-stroke engines. Although these low-pollution engines may cost more (about 10 to 20 percent more than the old carbureted two-stroke engines), they provide many economic and environmental benefits, and are consumer friendly.

Benefits of Low-Pollution Marine Engines

- Burn 35 to 50 percent less gasoline, which translates into fuel savings.
- Use up to 50 percent less lubricating oil.
- Reduce air emissions by 75 percent.
- Reduce water pollution by reducing the amount of gasoline released into surface waters.
- Are significantly quieter, and reduce smoke and fumes.
- Provide easier starting, faster acceleration, and quicker throttle response.
- Are less disruptive to wildlife and better for New Hampshire's environment!



New Hampshire Marine Dealers and Retailers Promote Low-Pollution Engines

EPA's regulations to phase-in the sale of low-pollution marine engines beginning in 1998 will reduce hydrocarbon emissions from pleasure craft by 75 percent. Unfortunately, due to the extreme durability of marine engines (some engines last over 40 years), the environmental benefits of the EPA regulations will not be fully realized until 2025.

Recognizing the importance of the state's clean air and water and not willing to wait seven years for the federal mandate to take effect, the New Hampshire Department of Environmental Services (DES) and the New Hampshire Marine Trades Association (NHMTA) have teamed up to encourage consumers to purchase and use cleaner-burning engines. DES and NHMTA entered into a voluntary agreement in February 2000 to accelerate the phase-in of the new low-pollution marine engines in New Hampshire prior to the EPA 2006 mandate.

The low-pollution engines are available for sale from many marine dealers and retailers all over New Hampshire. If you are in the market for a new outboard motor or PWC, or are considering a replacement of your existing outboard engine, ask your dealer about a new four-stroke or direct fuel injection two-stroke engine. By purchasing and using these cleaner burning engines and PWCs, you can help protect New Hampshire's air and water quality, while significantly reducing your fuel costs over the life of the engine.

Other Tips for Keeping New Hampshire's Air and Water Clean

In addition to promoting the sale of low-pollution engines, DES and the NHMTA encourage boaters to adopt other practices to protect air and water quality, including:

- Avoid spilling gasoline.
- Pour fuel slowly and smoothly.
- Ensure boat stability when refueling.
- Use a gasoline container you can handle easily and hold securely.
- Use a funnel or a spout with an automatic stop device to prevent overfilling the gas tank.
- Limit engine operation at full throttle.
- Eliminate unnecessary idling.
- Prepare engines properly for winter storage.
- Follow engine manufacturer's recommended maintenance schedule.

For more information on the low-pollution engines and how they help protect New Hampshire's air and water quality, contact DES at 603-271-3503.